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Ref: 8HWM-SR

JUN 29 1989

Mr. Dee Williamson
Monticello Project Manager
Department Of Energy
Post Office Box 2567
Grand Junction, Colorado 81502-2567

RE: Comments on Monticello Millsite
RI/FS Reports, Primary and
Secondary Documents

Dear Mr. Williamson:

The U.S. Environmental Protection Agency (EPA) has reviewed the draft remedial investigation and feasibility study (RI/FS) reports (April 1989) for the Monticello Millsite. We appreciate the Department of Energy (DOE) had revised these draft reports in conformance with the October 1988 Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA.

Enclosure A contains the EPA's detailed analyses and comments on the draft RI/FS reports, Primary and Secondary Documents. Generally, we have comments on the risk assessment; identification, screening, development, and detailed analysis of alternatives. The State of Utah's comments are in Enclosure B.

If you have any questions, please contact me at FTS 564-1793.

Sincerely,

A handwritten signature in cursive script, appearing to read "Lam Nguyen".

Lam Nguyen
Remedial Project Manager

Enclosures

cc: McCleod, UDH (with enclosures)
Silvernale/ Geise/ Gardner (with enclosures)

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ENCLOSURE A

Monticello Millsite Remedial Investigation/Feasibility Study

Purpose

The purpose of the Remedial Investigation (RI)/Feasibility Study (FS) functional equivalency review is to identify data gaps, unsupported or incorrect conclusions, including equivalency deficiencies, as well as identify additional data and information needs of the following DOE documents: Volume I, Revised Draft Remedial Investigation (April 1989); Volume II, Revised Draft Feasibility Study, (April 1989); Monticello Millsite Equivalency of Documentation Volumes I and II; and Monticello Site Federal Facilities Agreement Work Plan.

Introduction

The Superfund Amendments and Reauthorization Act of 1986 (SARA) placed the Surplus Facilities Management Program activities at Monticello under the regulatory framework of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and resulted in several new developments. The DOE submitted its Hazard Ranking System (HRS) score for the millsite to the Environmental Protection Agency (EPA) on October 31, 1987. Existing DOE environmental site characterization and engineering documents were rewritten and reformatted per CERCLA requirements during 1987, and a Draft Remedial Investigation/Feasibility Study (RI/FS) was issued for DOE internal review in January 1988. The DOE, EPA, and State of Utah entered into a Federal Facility Agreement (FFA) pursuant to CERCLA Section 120 in December 1988. This agreement stipulates the procedural framework for developing and implementing response actions under CERCLA/SARA. Determination of the equivalency of documents for the Millsite is based on the definition in Part III, Paragraph J. of the FFA which defines "Functional Equivalency" as "... an activity or element of work undertaken or performed pursuant to this Agreement including a document, submittal, contract, or action [that] meets appropriate procedural and substantive objections, standards and requirements set forth [by environmental legislation] in effect at the time of performance of the activity or element or work". This concept of functional equivalency of documents emphasizes that, while not necessarily meeting now-current guidelines to the letter, previous activities were performed under then current"... U.S. EPA guidelines, regulations, rules, criteria..."

Previous work cannot be compared directly with chapter and verse of existing RI/FS guidelines. What can be compared, however, is intent regarding fundamental data needs, standards comparison, logical conclusions, and data validity.

Primary-Secondary Documents Equivalency Review

The DOE documents listed in Table 1 as defined in the FFA Part XII, Paragraph C and D for the Monticello Millsite, and the required Primary Documents, include those reports that are major, discrete portions of the RI/FS activities.

The Secondary documents include those reports that are discrete portions of the Primary Documents and are typically input or feeder documents. As shown in Table 1, the Primary - Secondary Documents Equivalency Checklist identifies the Primary and Secondary documents required under the FFA and compares these documents to DOE's functional equivalent document(s) and section(s).

As shown in Table 1, the equivalency review indicates that the Primary and Secondary Documents required under the FFA have met the functional equivalency intent of the October 1988 Interim Final RI/FS Guidance.

However, under the October 1988 Interim Final RI/FS Guidance, a site specific Health and Safety Plan is required. Section 7.4.2 of the Monticello Site Federal Facilities Agreement Work Plan states that during the design, planning, and remedial action phase the occupational doses are to be maintained as low as reasonably achievable (ALARA). However, this Millsite Health and Safety Plan has not been properly addressed. Each site health and safety plan should include, at a minimum, the 11 elements described in Appendix B of the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH/OSHA/USCG/USEPA, 1985).

The elements required in a site health and safety plan are listed in 29 CFR 1910.120.

Table 1
Primary - Secondary Document Equivalency Checklist

<u>Primary Documents</u>	<u>DOE Equivalent Documents/Section(s)</u> <u>Meets Functional Equivalency (Yes/No)</u>
Scope of Work	(A) (B) Volume I, Section 2.1 (yes)
RI/FS Work Plan	(A) Section 1.0, Volume I Section 2.2 (yes)
	(B) Volume I Section 2.2 (yes)
Sampling and Analysis Plan	(B) Volume I, Section 2.2.2 (yes)
Quality Assurance Project Plan	(B) Volume I, Section 2.2.3 (yes)
Risk Assessment	(D) Section 1.2.5 (yes)
Community Relations Plan	(B) Volume I, Section 2.3 (yes)
RI Report	(C) Yes
Initial Screening of Alternatives	(D) Section 2.0 (yes)
FS Report	(D) Yes
<u>Secondary Documents</u>	
Initial Remedial Action/ Data Quality Objectives	(B) Volume I, Section 3.1 (yes)
Site Characterization Summary	(B) Volume I, Section 3.2 (yes)
Detailed Analysis of Alternatives	(D) Section 3.1.4, 3.1.5 (yes)
Post-Screening Investigation Work Plan	(D) 4.3, 4.4, 4.5 (yes)
Feasibility Studies	(A) Section 4.2 (yes)
Sampling and Data Results	(C) Appendix A, B Section 2.0 (yes)
Key: (A) = Monticello Site Federal Facilities Agreement Work Plan (May, 1989) (B) = Equivalency of Documentation Revised Draft (April, 1989) (C) = Remedial Investigation, Volume I Revised Draft (April, 1989) (D) = Feasibility Study, Volume II (April, 1989)	

RI/FS Document Equivalency Review

In January 1988 the DOE completed a draft RI/FS for the Monticello Millsite for internal DOE review. Because the FFA was yet to be signed, it was determined by DOE not to distribute that draft version. The main reason for this decision was that the FFA explicitly references the October 1988 Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA. The draft RI/FS report had been prepared based on the June 1985 RI/FS guidance document.

This potential conflict was resolved in a recent EPA direction to the DOE (Duprey to Murphy, 2/2/89), which states that the current RI/FS must be consistent with the content of the October 1988 guidance but the format, which is based on June 1985 guidance, need not be changed.

The preliminary review of DOE's Revised Draft Remedial Investigation (April 1989) and Revised Draft Feasibility Study (April 1989) recognized the completeness of these documents and overall conformance to the October 1988 Interim Final RI/FS Guidance. The equivalency review was initiated with development of an RI/FS checklist based on the October 1988 Interim Final RI/FS suggested formats. The RI Document Equivalency Checklist (Table 2) and the FS Document Equivalency Checklist (Table 3) compare the functional equivalency of EPA's suggested RI/FS activities to the DOE applicable section(s).

The following analysis of this equivalency of documents submitted for review compares the DOE Revised Draft Remedial Investigation Study with the suggested criteria published in the EPA guidance on Remedial Investigations under OSWER Directive 9355.3-01 Interim Final Guidance, October 1988.

**Comparison of the EPA RI Suggested Outline
With the Submitted DOE RI Document**

1.0 Introduction

1.1 Purpose of Report

The RI document clearly states the purpose of the report and is organized in general conformance with the suggested RI outline published in the October 1988 Interim Final RI/FS Guidance (EPA, 1988)

1.2 Site Background

1.2.1 Site Description

A detailed discussion of the site has been presented in the RI. Maps of the site are presented clearly and accurately in describing site location boundaries and the site general location. This section meets the intent of the suggested RI guidance.

1.2.2 Site History

A detailed historical review of the Monticello Millsite is included in the RI. Historical aerial photographs and field photographs in this section provided helpful background information. This section meets the intent of the suggested RI guidance.

1.2.3 Previous Investigation

A detailed historical review of environmental problems associated with past mill operations, early cleanup activities with associated historical photographs, and the extent of problems was presented in the RI. This section meets the intent of the suggested RI guidance.

1.4 Report Organization

A general and adequate summary of the report organization is included in the RI. However, the basis of the RI guidelines are not clearly stated. The discussion in the Monticello Site, Federal Facilities Agreement Work Plan, May 1989, clearly states a recent EPA direction to DOE, that the current RI/FS must be consistent with the content of the October 1988 guidance, but the format, which is based on June 1985 guidance, need not be changed.

2.0 Study Area Investigation

2.1 Introduction

- 2.1.1 Surface Features
- 2.1.2 Contaminant Source Investigation
- 2.1.3 Meteorological Investigations
- 2.1.4 Surface-Water and Sediment Investigations
- 2.1.5 Geological Investigations
- 2.1.6 Soil and Vadose Zone Investigations
- 2.1.7 Ground Water Investigation
- 2.1.8 Human Population Surveys
- 2.1.9 Ecological Investigations

2.2 Field Activities Documentation

The Study Area Investigation included detailed discussions, including mapping, figures and field sampling results of field activities associated with the Monticello Millsite site characterization process. The equivalency intent of the EPA guidelines have been satisfied in this section.

3.0 PHYSICAL CHARACTERISTICS

3.1 INTRODUCTION

- 3.1.1 Surface Features
- 3.1.2 Meteorology
- 3.1.3 Surface - Water Hydrology
- 3.1.4 Geology
- 3.1.5 Soils
- 3.1.6 Hydrogeology
- 3.1.7 Demography and Land Use
- 3.1.8 Ecology

The results of the field activities are presented clearly and are adequately addressed in the Study Area Investigation discussion. The equivalency intent of the EPA guidelines have been satisfied in this section.

4.0 NATURE AND EXTENT OF CONTAMINATION

4.1 INTRODUCTION

4.1.1 Sources

4.1.2 Soils and Vadose Zone

4.1.3 Ground Water

4.1.4 Surface Water and Sediments

4.1.5 Air

The nature and extent of both radioactive and non-radioactive contaminants associated with the Monticello Millsite media are addressed in detail in these sections. These sections meet the equivalency intent of the suggested RI guidance.

5.0 CONTAMINANT FATE AND TRANSPORT

5.1 POTENTIAL ROUTES OF MIGRATION

5.2 CONTAMINANTS MIGRATION

The contamination fate and transport mechanisms, mobility of the waste through material, man caused actions and ultimate fate of the uranium mill tailings in the environment are adequately addressed in the RI. The equivalency intent of the EPA guidelines have been satisfied in this section.

6.0 BASELINE RISK ASSESSMENT

6.1 PUBLIC HEALTH EVALUATION

6.1.1 Exposure Assessment

6.1.2 Toxicity Assessment

6.1.3 Risk Characterization

6.2 ENVIRONMENT ASSESSMENT

These three areas are evaluated in the appropriate FS comment section and found to meet the general intent of the IPA Guidance. However, specific risk to efficiencies have not been developed to assist in the risk assessments for each alternative at each Operable Unit (see FS). Therefore, these sections partially meet the intent of the EPA Guidelines.

The detailed assessment of radioactive and non-radioactive constituents are presented in the RI. The results of the public health assessments presented in the RI are based on as-is, or enhanced condition scenario. The effects on the environment, exposure pathways, and potential receptors are not considered for the specific remedial action alternatives discussed in the accompanying FS. The equivalency intent of the EPA guidelines have not been completely satisfied in these sections.

7.0 SUMMARY AND CONCLUSIONS

7.1 SUMMARY

7.1.1 Nature and Extent of Contamination

7.1.2 Fate and Transport

7.1.3 Risk Assessment

The RI provides detailed summaries of each section mentioned above. The summaries are included in the respective section discussion and are not summarized in separate summary sections. The equivalency intent of the EPA guidelines have been satisfied except for the risk coefficients calculations required for each alternative in each Operable Unit. This section partially meets the intent of the EPA criteria.

7.2 CONCLUSIONS

7.2.1 Data Limitations and Recommendation for Future Work

The RI provides the detailed information required to support the development of the FS alternatives. The data available is sufficient to complete the exposure, toxicity and risk assessment sections.

7.2.2 Recommended Remedial Action Objectives

The DOE has presented its remedial action objectives in terms of the standards contained in potentially applicable ARARs in Section 1.3 of the FS. The information present meets the intent of the interim final draft RI/FS Guidance EPA October 1988.

APPENDICES

A. ANALYTICAL DATA AND QA/QC EVALUATION

The DOE Sampling and Analysis Plan and Quality Assurance Project Plan documents submitted fulfill the functional equivalency intent.

B. RISK ASSESSMENT METHODS

The detailed assessment of radioactive and non-radioactive constituents is presented in Section 8.0 and 8.2 of the RI. The functional equivalency intent has been fulfilled, except for the risk coefficient calculations required for each alternative in each Operable Unit.

FIGURE 2

RI DOCUMENT EQUIVALENCY CHECKLIST

EPA RI Activities	DOE RI functionally Equivalent Document Section(s) meets functional Equivalency (Yes / No)

1.0 INTRODUCTION	
1.1 Purpose of Report	1.1 (yes)
1.2 Site Background	1.2 (yes)
1.2.1 Site Description	1.2 (yes)
1.2.2 Site History	1.2.2, 1.2.2.1, 1.2.2.2 (yes)
1.2.3 Previous Investigations	1.2.2.3 (yes)
1.3 Report Organization	1.4 (partially)
2.0 STUDY AREA INVESTIGATION	
2.1 Introduction	
2.1.1 Surface Features	1.2.1, 4.2.1 (yes)
2.1.2 Contaminant Source Investigations	3.0, 4.1.3 (yes)
2.1.3 Meteorological Investigations	2.4 (yes)
2.1.4 Surface Water and Sediment Investigations	5.0 (yes)
2.1.5 Geological Investigations	4.2-4.2.2.5 Appendix A (yes)
2.1.6 Soil and Vadose Zone Investigations	4.1.1 (yes)
2.1.7 Ground Water Investigations	4.3 (yes)
2.1.8 Human Population Surveys	2.0 (yes)
2.1.9 Ecological Investigations	7.0 (yes)
2.2 Field Activities Documentations	Appendix A,B (yes)
3.0 PHYSICAL CHARACTERISTICS OF THE STUDY AREA	
3.1 Introduction	
3.1.1 Surface Features	1.2.1, 4.2.1 (yes)
3.1.2 Meteorology	2.4 (yes)
3.1.3 Surface Water Hydrology	5.0 (yes)
3.1.4 Geology	4.2-4.2.2.5 Appendix A (yes)
3.1.5 Soils	4.1.1 (yes)

3.1.6	Hydrogeology	4.3
3.1.7	Demography and Land Use	2.0-2.2.3 (yes)
3.1.8	Ecology	7.0-7.1.5 (yes)
4.0	NATURE AND EXTENT OF CONTAMINATION	
4.1	Introduction	
4.1.1	Sources	3.0-4.1.3 (yes)
4.1.2	Soils and Vadose Zone	4.0-4.1.3 (yes)
4.1.3	Ground Water	4.3-4.4.4 (yes)
4.1.4	Surface Water and Sediments	5.0 (yes)
4.1.5	Air	6.0 (yes)
5.0	CONTAMINANT FATE AND TRANSPORT	
5.1	Potential Routes of Migration	8.0 (yes)
5.2	Contaminant Migration	3.3-3.3.7 (yes)
6.0	BASELINE RISK ASSESSMENT	
6.1	Public Health Evaluation	(yes)
6.1.1	Exposure Assessment	8.2.3 - 8.2.2.4 (partially)
6.1.2	Toxicity Assessment	8.2.3 (partially)
6.1.3	Risk Characterization	8.2.4 (partially)
6.2	Environmental Assessment	(partially)
7.0	SUMMARY AND CONCLUSIONS	
7.1	Summary	
7.1.1	Nature and Extent of Contamination	1.3-1.3.2, 3.0, 4.1.3-4.1.3.3 (yes)
7.1.2	Fate and Transport	8.2.2.1 (yes)
7.1.3	Risk Assessment	8.2.4 - 8.2.5 (partially)
7.2	Conclusions	
7.2.1	Data Limitations and Recommendations	N/A
7.2.2	Recommended Remedial Action Objectives	FS (yes)

APPENDICES

- | | |
|--|-------------------------------------|
| A. Analytical Data and QA/QC
Evaluation Results | Appendix B,
Tables B-1,2,3 (yes) |
| B. Risk Assessment Methods | 8.0-8.2 (partially) |

The general outline of the FS document submitted by DOE follows the criteria stated in the November 1988 National Contingency Plan (NCP). The DOE has used the NCP streamlining method and has included the nine specific criteria for evaluating each alternative and selecting remedies. A range of remedial strategies have been developed and screened on the basis of effectiveness, implementability, and cost. The most appropriate alternatives are then analyzed against these following criteria:

- Overall Protection of Human Health and the Environment
- Compliance with ARARs
- Long Term Effectiveness and Permanence
- Reduction of toxicity, mobility and volume
- Short term effectiveness
- Implementability
- Cost
- State acceptance
- Community Acceptance

Three distinct operable units have been developed so that remedial actions for each unit can be developed, screened, and evaluated independently.

The following analysis of this equivalency of documents submitted for review compares the DOE Revised Draft Feasibility Study with the suggested criteria published in the EPA guidance on Feasibility Studies under OSWER Directive 9355.3-01 Interim Final Guidance, October 1988:

**COMPARISON OF THE EPA FS SUGGESTED OUTLINE
WITH THE SUBMITTED DOE FS DOCUMENT**

1.0 Introduction

1.1 Purpose and Organization of Report

➤ The FS document clearly states the purpose of the report, and is organized in general conformance with the suggested FS outline published in the October 1988 Interim Final RI/FS Guidance (EPA, 1988)

1.2 Background Information

1.2.1 Site Description

The site is described in much greater detail in the RI portion of the submitted documents. A general and adequate descriptive summary of the site has been presented in the FS. Maps of the site in relation to the surrounding community provide a useful perspective as an introduction to the proposed remedial action. This section meets the intent of the suggested FS guidance.

1.2.2 History

A comprehensive historical review of the Monticells Mill Site is included in the FS. The intents of the EPA guidelines have been satisfied in this section.

1.2.3 Nature and Extent of Contamination

Both radioactive and non-radioactive hazards associated with the Monticells Mill Site are addressed in this section. A complete analysis of the hazard is developed in later sections. A historical description of the nature and extent of contamination is included to further characterize the scope of the hazard. This section meets the intent of the FS criteria.

1.2.4 Contamination Fate and Transport

Section 3.0 of the RI adequately addresses the transport mechanisms, mobility of the waste through natural and man caused actions and ultimate fate of the uranium mill tailings in the environment. This section meets the intent of the FS criteria.

1.2.5 Baseline Risk Assessment

A general outline and summary of the baseline risk assessment is presented in the FS. In this section, an assessment of the health effects from existing conditions is described, so that the results may be compared to the effectiveness of the various alternatives considered. The detailed assessment of radioactive and non-radioactive constituents is presented in Section 8.0 and 8.2 of the RI.

2.0 Identification and Screening of Technologies

2.1 Introduction

An evaluation is presented in this section that examines the process of selecting a remedial action. Factors assessed in this section included relevance and appropriateness tests, waivers of ARARs, and the ARAR identification methodology applied at the Monticello site. A description of the FFA ARARs is also included in this section. Chemical Specific, Location-Specific, Action Specific and State Requirements that relate to the project are presented in detail. These requirements are compared to the appropriate site ARARs to determine if they are to be used in the alternative development of remedial action alternatives.

2.1.2 Allowable Exposure - ARARs

Air, water and soil and sediment concentrations at the Millsite are compared to the ARAR standards based on the analysis in Section 1.3 of the FS document submitted by DOE. The intent of the EPA FS criteria is fulfilled in this section.

2.1.3 Allowable exposure based on risk assessment.

A risk assessment is required that states an acceptable range of contamination levels for each exposure route that satisfies this section. A risk range of 10^{-4} to 10^{-7} should be used to screen each technology proposed. Allowable exposures based on risk assessment for each medium of interest are neither stated nor referenced in this section. However, Section 3.0 of the RI, and Appendix A, "Radiological Health Effects, and Appendix B, "Health Effects due to tailings-related non-radioactive elements" address the above requirements. The analysis is wholly adequate but should include risk coefficients for each alternative. A summary or at the least a reference footnote to Appendix A should be added to the body of the FS in this section.

2.2 Objectives of Remedial Action

The DOE has presented its remedial action objectives in terms of the standards contained in the potentially applicable ARARs (Section 1.3 of the FS). This approach is consistent with the EPA FS guidelines.

Based on existing information, site specific remedial action objectives have been adequately developed. The contaminants have been specified, the media of concern identified, the exposure routes and receptors stated, and preliminary remediation goals (ranges of levels for each exposure route) defined in this section. The information present meets the intent of the interim final draft RI/FS Guidance EPA Oct. 88.

2.2.1 Medium of Interest

The environmental medium and contaminants of concern have been satisfactorily addressed in the FS. Air, surface, water, groundwater, soils and sediments are described, in terms of how each parameter exceeds ARAR standards.

2.3 General Response Actions for Medium of Interest

2.3.1 Volume Estimate

Section 2.2 of the submitted FS partially addresses the volume estimates for each medium of interest. This section should be further developed to adequately assess the volume or area of tailings. Comparison to discrete risk levels may provide the most rational basis for defining areas or volumes. Treatment, containment or exposure technologies are not developed in terms of volume estimates in this section.

2.4 Identification and Screening of Technology Types and Process Options

2.4.1 Identification and Screening of Technologies

2.4.2 Evaluation of Technologies and Selection of Representative Technologies

The FS document fully identifies the environmental media affected and develops remedial action objectives based on ARAR standards. Technology types and process options for each media of interest are stated, and each option is screened based on effectiveness, implementability and cost. Table 2-1 of the FS is presented to clearly outline the process.

3.0 Development of Alternatives

3.1 Rationale

The FS subdivides the millsite into three operable units and examines the combination of technologies/media into alternatives in a manner that fully meets the intent of the EPA FS guideline.

3.2 Screening of Alternatives

Although each alternative for the millsite is only examined briefly and not in any great detail, the FS document submitted meets the intent of the EPA FS guidance for the operable Unit I alternative. The FS document does not adequately analyze the preliminary alternatives for operable Unit II and III. These should be further developed. Therefore this section only partially meets the criteria for overall analysis of the preliminary alternatives.

3.2.5 Summary of Screening

Rather than summarizing the alternatives presented, the FS document submitted retains three alternatives and rejects one alternative for detailed analysis at this millsite. The summary of screening for operable unit II and III does not adequately meet the intent of the EPA guidance.

4.0 Detailed Analysis of Alternatives

4.1 Introduction

The FS document is quite comprehensive in its explanations of each alternative and an overview of the criteria used for evaluation of each alternative.

4.2 Individual Analysis of Alternatives

4.2.1 Operable Unit I Mill Tailings

4.2.1.1 Description

4.2.1.2 The FS document describes remedial action associated with Operable Unit I - Mill tailings, in terms of the three selected alternatives. Each alternative is examined in detail based on the actual work to be performed, fully meeting the EPA FS guidance. Overall protection, compliance with ARARs, longterm effectiveness and permanence, reduction of mobility, toxicity or volume, short term effectiveness, implementability, cost, State

acceptance and community acceptance are all analyzed based on the three selected alternatives as well as the no-action alternative.

4.3 Comparative Analysis

- A comparative analysis of alternatives is presented in Table 4-3 of the FS document, which offers a concise summary of the information presented for Operable Unit I. This allows for convenient cross comparisons of the alternatives. Threshold, primary balancing, cost, and modifying criteria are used to compare the three alternatives.

4.2.2 Operable Unit II - Peripheral Properties

4.2.2.1 Description

4.2.2.2 Assessment

The FS document describes remedial action associated with the Peripheral Properties in terms of selected alternatives. Three of the alternatives include removal based on a waiver of varying applications of ARAR standards. Each alternative is examined in detail based on the evaluation criteria of overall protection, compliance with ARARs, longterm effectiveness and permanence, reduction of mobility, toxicity or volume, short term effectiveness, implementability, cost, State acceptance, and community acceptance. The no-action alternative is also examined based on the above criteria of ARAR standards. Due to the nature of this operable unit, it is determined that the DOE F S document meets the intent of the EPA FS guidance.

4.3 Comparative Analysis

A comparative analysis of alternatives is presented in Table 4-4 of the FS document. It offers a concise summary of the information presented for Operable Unit II. This tabular format allows for convenient cross comparisons of the various alternatives presented. Threshold, primary balancing, cost, and modifying criteria are used to compare these alternatives.

4.2.3 Operable Unit III

4.2.3.1 Description

4.2.3.2 Assessment

The FS document describes remedial action associated with Operable Unit III - Ground Water in terms of three alternative remedial actions as well as the no-action alternative. Each alternative is examined in detail based on the EPA FS guidance of overall protection, compliance with ARARs, longterm effectiveness and permanence, reduction of mobility, toxicity or volume, short term effectiveness, implementability, cost, State acceptance and community acceptance.

4.4 Comparative Analysis

A comparative analysis of alternatives is presented in Table 4-5 of the FS document. It offers a concise summary of the information presented for Operable Unit III. This tabular format allows for convenient cross comparisons of the various alternatives presented. Threshold, primary balancing, cost, and modifying criteria are used to compare these alternatives.

The presentation of the comparative analyses does compare the strengths and weaknesses only of the alternatives presented in each Operable Unit. A comparison is offered with respect to each criterion for that Operable Unit only. No analysis is provided that includes how reasonable variations of key uncertainties could change the expectations of the relative performance of each alternative.

No overall comparison is offered to indicate how the alternatives presented for each Operable Unit would interface. This should be included to provide clarification for the alternative.

As stated previously, risk coefficients should be indicated for each alternative so that final analysis can be based on a matrix which will highlight the most advantageous alternative. The DOE states in Chapter 5 of its Draft FS document that the above information shall be provided subsequent to EPA review of the RI/FS. However, it is appropriate to tabulate all of the FS alternatives into a matrix table comparing risk coefficients, ARARs, etc., so as to provide the reader with an indication of the most advantageous alternative.

Bibliography

The bibliography contains all of the pertinent references for the development of this FS.

Appendixes

Appendix A - Radiological Health Effects

The technical format of this section is adequate for the calculations of internal gamma, radon and internal exposure from airborne radioparticulates for exposure at the no-action and Monticello Millsite alternative only. However, these values should be applied to all Operable Unit alternatives.

Appendix B - Non Radiologic Health Effects

The technical format of this section is adequate for calculations of non-radiologic exposures for the no-action and Monticello Millsite alternative only. The Peripheral Property and Groundwater Operable Unit should be included, as well as the resulting risk coefficient for each proposed alternative.

Appendix C - Detailed Cost Estimates

Cost estimates are adequately developed for operable Unit I.

Appendix D - Supplemental Standards

Criteria presented in this section adequately addresses the information necessary for the ARAR waiver of 40CRF192.

Appendix E

Detailed cost estimates are adequately developed for operable Unit II.

Appendix F

Detailed cost estimates are adequately developed for operable Unit III.

Appendix G

Analysis of the hydrogeologic conditions using the "Random-Walk" Model supports the source (mill tailings) removal alternative. It is useful information that has been included to assist the decision making process.

FIGURE 2
FS Document Equivalency Checklist

EPA FS Activities		DOE Functionally Equivalent FS Documents Meets Functional Equivalency (Yes/No)
1.0	INTRODUCTION	
1.1	Purpose of Organization Report	Section 1.1 (yes)
1.2	Background Information	Section 1.2 (yes)
1.2.1	Site Description	Section 1.2.1 (yes)
1.2.2	History	Section 1.2.2 (yes) 1.2.2.1 (yes) 1.2.2.2 (yes) 1.2.2.3 (yes)
1.2.3	Nature and Extent of Contamination	Section 1.2.3 (yes) 1.2.3.1 (yes) 1.2.3.2 (yes) 1.2.3.3 (yes)
1.2.4	Contamination Fate and Transport	Section 1.2.4 (yes) Section 1.2.5 (yes) 8.0 (RI) (partially) 8.2 (RI) (partially) Appendix A (yes) Appendix B (yes)
2.0	Identification and Screening of Technologies	Section 2.0 (yes)
2.1	Introduction	Section 1.3 (yes) 1.3.1 (yes) 1.3.1.1-6 (yes) 1.3.2 (yes)
2.1.2	Allowable Exposure-ARARs	Section 1.4 (yes)
2.1.3	Allowable Exposure-Risk Assessment	Section 3.0 RI (partially) Appendix A (partially) Appendix B (partially)
2.2	Objectives of Remedial Action	Section 1.5 (yes) 1.5.2 (yes)
2.2.1	Medium of Interest	Section 1.5.1 (yes)
2.3	General Response Actions	Section 2.0 (yes)
2.3.1	Volume Estimates	Section 2.1 (partially) 2.2 (partially) 2.3 (partially)

2.4	Identification and Screening of Technology Types	Section 2.4 (yes)
2.4.1	Screening of Technologies	2.4.1 (yes)
		2.4.1.1-14 (yes)
2.4.2	Evaluation and Selection of Technologies	2.4.2.1-3 (yes)
3.0	Development of Alternatives	3.0 (yes)
3.1	Rationale	3.1 (yes)
		3.1.1 (yes)
		3.1.1.1-3 (yes)
		3.1.2 (yes)
		3.1.2.1-3 (yes)
		3.1.3 (yes)
		3.1.3.1-3 (yes)
3.2	Screening of Alternatives	Section 3.1.4 (partially)
		3.1.4.1-3 (partially)
3.2.5	Summary of Screening	Section 3.1.5 (yes)
		3.2 (partially)
		3.3 (partially)
4.0	Detailed Analysis of Alternatives	Section 4.0 (yes)
4.1	Introduction	4.1 (yes)
		4.2 (yes)
		4.2.1 (yes)
		4.2.1.1-9 (yes)
4.2	Individual Analysis of Alternatives	Section 4.3 (yes)
4.2.1	Operable Unit I	4.3.1 (yes)
4.2.1.1	Description	4.3.1.1 (yes)
4.2.1.2	Assessment	4.3.1.2 (yes)
		4.3.1.3 (yes)
		4.3.2 (yes)
		4.3.2.1-9 (yes)
4.3	Comparative Analysis-Unit I	Section 4.3.3 (partially)
		3.2.1-9 (yes)
4.2.2	Operable Unit II	Section 4.4 (yes)
4.2.2.1	Description	4.4.1 (yes)
4.2.2.2	Assessment	4.4.2 (yes)
		4.4.3 (yes)
		4.4.3.1-4 (yes)
		4.4.4 (yes)
		4.4.4.1-9 (yes)
4.3	Comparative Analysis - Unit II	Section 4.4.5 (partially)
4.2.3	Operable Unit III	Section 4.5 (yes)

4.2.3.1	Description	4.5.1 (yes)
4.2.3.2	Assessment	4.5.1.1-4 (yes)
		4.5.2 (yes)
		4.5.2.1-9 (yes)
4.3	Comparative Analysis - Unit III	Section 4.5.3 (partially)
	Bibliography	Bibliography (yes)
	Appendixes	Appendix A (partially)
		Appendix B (partially)
		Appendix C (yes)
		Appendix D (yes)
		Appendix E (yes)
		Appendix F (yes)
		Appendix G (yes)

Log



State of Utah

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

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Received 6/30/89

BSHM-57412-1

HWM

To: Mr. Lam Nguyen
U. S. EPA Region VIII
999 18th Street Suite 500
Denver, CO 80202-2405

Dear Mr. Nguyen:

The State of Utah has reviewed the draft RI/FS Report for the Monticello Uranium Mill Tailings Site. Enclosed are general and specific comments concerning the site.

If there are any questions, please contact Bob McLeod at (801) 538-6170.

Sincerely,

From: Brent C. Bradford, Director
Bureau of Solid and Hazardous Waste

Enclosure

BCB/RM/ljr

General Comments on the
Monticello RI/FS Report

1. The RI/FS Report should conclude by stating the alternative presently considered as preferred by DOE for the Monticello site is open for further discussion and review. Once a preferred alternative is named in the proposed plan, specific designs will need to be reviewed in more detail.

2. The State has reviewed the plans for Alternative No. 1 (the South site) and concludes that the cap, as presently designed, will not meet UMRCA standards for ground-water protection. Listed below are some comments on the cap design:

- a. UMRCA has not accepted a vegetation cover for any sites.
- b. Six feet of radon barrier is not required for radon protection.
- c. The Claymax barrier includes a manmade material. It may not be possible to insure that this barrier will meet the requirements of a 1000 year design. All natural materials must be used.
- d. The rock armor should not be covered with fine material.
- e. Placement of anything less than 12 inches thick presents a problem with construction. UMRCA has suggested that layers not be less than 12 inches thick.
- f. It does not make sense to place the contaminated material at a 3:1 slope and then cover the material at a 5:1 slope.
- g. The 12 inches of bentonite-amended soil under the Claymax is not sufficient under UMRCA standards since Claymax is not acceptable.

3. The embankment design for Alternative No. 1 shows that the contaminants will be placed above the Mancos Shale in the alluvial deposits. Further evidence is needed to assure that water filtering through the embankment during its 1000 year design life will not contact the Mancos Shale and reach the channel. Design considerations can be applied to insure a 1000 year design life. It might be possible to key the design into the Mancos Shale or to construct a buffer zone of natural materials.

4. Figure 4-1 (page 4-10, Volume II) shows a large temporary stockpile, staging, and materials processing area. This area is somewhat removed from the proposed repository and is separated by several drainages. Please justify the size and location of this area.

5. The Utah Bureau of Radiation Control has established a policy that no waste material carrying a RCRA or CERCLA designation can be accepted by a facility licensed as a Uranium Mill. This must be considered when looking at Alternative No. 2. This alternative would require concurrence from DOE, NRC, EPA, and the State of Utah on placement of the tailings.

6. The FS report suggests that some areas included in the "peripheral" properties may have characteristics meeting the criteria for applying Supplemental Standards. As stated in the report (page 4-43), these areas may need to be handled on a case by case basis. The State feels that the nine evaluation criteria (listed on page 4-1) should carefully be looked at for these areas with special consideration to the "overall" protection

of human health and the environment" before any decisions are made. With all other considerations aside, all of the properties could be cleaned using conventional construction methods.

7. The relocation of the tailings to various other sites needs further investigation. The FS has not fully considered other nearby sites which may be more appropriate.

8. The State feels that the public should be made aware of possible alternatives for cleanup early in the RI/FS process so that their concerns may be considered as required by CERCLA.

Specific Comments on the
Monticello RI/FS Report

Volume I

1. (Page 3-23, last sentence before Table 3-4) Delete the "-" from the word equilibrium.
2. (Page 3-37) Figure 3-15 does not show any upgradient data for radium.
3. The first paragraph on page 3-40 suggests limited dispersion for Ra-226 yet figure 3-15 shows a high value for Ra in Montezuma Canyon (10 pCi/l). The possible source of this Ra should briefly be explained or referenced.
4. The Plate folder at the back of the report is mislabeled for Plates 2-1 and 2-2.
5. (Page 4-14, second paragraph, 3rd sentence) "rochs" should be "rocks".
6. (Page 4-38) In the section on "Vertical Conductivity of the Dakota Aquitard", the downward travel time through the aquitard is estimated through a thickness of 87 feet. Is this thickness representative of the possible travel time of contamination to the Burro Canyon Formation? In another case, the Dakota aquitard is only 37 feet thick (hole #70 on site) and thins to 0 feet 2400 feet downstream. This means that the travel time could be much less.
7. (Page 4-46, first paragraph, last sentence) Please explain in further detail, the statement, "The contamination plume cannot extend much beyond Well 82-13 because of valley configuration."
8. (Page 5-20) Figure 5-6 needs a scale.
9. (Page 6-17, Figure 6-6) Please explain why the contours on the Carbonate pile go from low to high from the center outward?
10. (Page 8-7, last paragraph) Section 8.1.3.1 lists ingestion of contaminated foods as a possible exposure pathway. The last paragraph on page 8-7 states that this pathway has been deemed "insignificant". Sections 6.4 and 8.1.2.2 discuss ingestion from windblown tailings but do not discuss ingestion from other sources. Section 8.2.2.2 suggests that ingestion could occur through the irrigation of alfalfa to cattle to human pathway or through the irrigation of vegetables to human pathway. This has not been shown to be "insignificant".

Volume II

1. (Page 2-2, first paragraph, 2nd sentence) "1.0 million yards of tailings" should be "1.0 million cubic yards of tailings".
2. Page 4-28, last paragraph, last sentence, states that fugitive dust emissions within the City of Monticello will on an annual basis not exceed the Federal primary standard. Since most of the work will be done during the summer months and not during the winter due to snow, it would be better to look at fugitive dust emissions on a 6 month basis.
3. (Page 4-29, last paragraph, 3rd sentence) "site" should be "sites".
4. (Page 4-44) In the title for Alternative 2, the word "Senstive" should be "Sensitive".
5. (Page 4-58, Section 4.5.1.3) This section should mention that ground-water monitoring will take place during passive restoration.
6. Page 4-59, 1st paragraph, last sentence, states that the alluvial aquifer would improve to background within 60 years. Page 4-60, 2nd paragraph, 2nd sentence, states that it would require 80 years for passive flushing. Is it 60 or 80 years?
7. (Page 4-61, first sentence) the sentence should end with "both Federal and State ground-water ARARs".
8. Appendix 6 states that it will take 50 to 60 years for the ground water to naturally flush out uranium to acceptable levels. How accurate is the Random-Walk method in predicting contaminate transport (+ or - ? years)? By only using uranium in the transport model, how do we know that other contaminants will be flushed out to acceptable levels within the same time frame?
9. Why are not elements such as arsenic and selenium included in table B.1 on page B-1 of Appendix B?